

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

REC'D 27 JUN 2006

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Applicant's or agent's file reference 1104-2PCT	FOR FURTHER ACTION		See Form PCT/IPEA/416																
International application No. PCT/US05/04811	International filing date (day/month/year) 16 February 2005 (16.02.2005)	Priority date (day/month/year) 17 February 2004 (17.02.2004)																	
International Patent Classification (IPC) or national classification and IPC IPC: A22C 29/02(2006.01) USPC: 452/2																			
Applicant HULIN, MICHAEL J.																			
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>9</u> sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> (sent to the applicant and to the International Bureau) a total of <u>18</u> sheets, as follows:</p> <p><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p> <p>4. This report contains indications relating to the following items:</p> <table border="0"> <tr> <td><input checked="" type="checkbox"/> Box No. I</td> <td>Basis of the report</td> </tr> <tr> <td><input type="checkbox"/> Box No. II</td> <td>Priority</td> </tr> <tr> <td><input type="checkbox"/> Box No. III</td> <td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td><input checked="" type="checkbox"/> Box No. IV</td> <td>Lack of unity of invention</td> </tr> <tr> <td><input checked="" type="checkbox"/> Box No. V</td> <td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td><input type="checkbox"/> Box No. VI</td> <td>Certain documents cited</td> </tr> <tr> <td><input type="checkbox"/> Box No. VII</td> <td>Certain defects in the international application</td> </tr> <tr> <td><input checked="" type="checkbox"/> Box No. VIII</td> <td>Certain observations on the international application</td> </tr> </table>				<input checked="" type="checkbox"/> Box No. I	Basis of the report	<input type="checkbox"/> Box No. II	Priority	<input type="checkbox"/> Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	<input checked="" type="checkbox"/> Box No. IV	Lack of unity of invention	<input checked="" type="checkbox"/> Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	<input type="checkbox"/> Box No. VI	Certain documents cited	<input type="checkbox"/> Box No. VII	Certain defects in the international application	<input checked="" type="checkbox"/> Box No. VIII	Certain observations on the international application
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Date of submission of the demand 10 March 2006 (10.03.2006)		Date of completion of this report 24 April 2006 (24.04.2006)																	
Name and mailing address of the IPEA/ US Mail Stop PCT, Attn: IPEA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (571) 273-3201		Authorized officer Peter Poon Telephone No. (571) 272-6891																	

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/US05/04811

Box No. I Basis of the report

1. With regard to the **language**, this report is based on:

- ☒ the international application in the language in which it was filed.
- ☐ a translation of the international application into _____, which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
- ☐ publication of the international application (under Rule 12.4(a))
- ☐ international preliminary examination (under Rules 55.2(a) and/or 55.3(a))

2. With regard to the **elements** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

- ☐ the international application as originally filed/furnished
- ☒ the description:
 pages 1-21 as originally filed/furnished
 pages* NONE received by this Authority on _____
 pages* NONE received by this Authority on _____
- ☒ the claims:
 pages NONE as originally filed/furnished
 pages* NONE as amended (together with any statement) under Article 19
 pages* 22-38 received by this Authority on 10 March 2006 (10.03.2006)
 pages* 39 received by this Authority on 10 March 2006 (10.03.2006)
- ☒ the drawings:
 pages 1-15 as originally filed/furnished
 pages* NONE received by this Authority on _____
 pages* NONE received by this Authority on _____
- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing.

3. ☒ The amendments have resulted in the cancellation of:

- ☐ the description, pages _____
- ☒ the claims, Nos. 92-93
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to the sequence listing (*specify*): _____

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to the sequence listing (*specify*): _____

** If item 4 applies, some or all of those sheets may be marked "superseded."*

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

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Box No. IV Lack of unity of invention

1. ☒ In response to the invitation to restrict or pay additional fees the applicant has, within the applicable time limit:
 - ☐ restricted the claims.
 - ☒ paid additional fees.
 - ☐ paid additional fees under protest, and, where applicable, the protest fee
 - ☐ paid additional fees under protest but the applicable protest fee was not paid
 - ☐ neither restricted the claims nor paid additional fees
2. ☐ This Authority found that the requirement of unity of invention is not complied with and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.
3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is:
 - ☐ complied with.
 - ☒ not complied with for the following reasons:

Please See Continuation Sheet

4. Consequently, this report has been established in respect of the following parts of the international application:
 - ☐ all parts
 - ☒ the parts relating to claims Nos. 1-51 and 73-84

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

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Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims <u>1-47 and 73-84</u>	YES
	Claims <u>48-51</u>	NO
Inventive Step (IS)	Claims <u>1-47 and 73-84</u>	YES
	Claims <u>48-51</u>	NO
Industrial Applicability (IA)	Claims <u>1-51 and 73-84</u>	YES
	Claims <u>NONE</u>	NO

2. Citations and Explanations (Rule 70.7) Please See Continuation Sheet

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

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Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

The drawings are objected to under PCT Rule 66.2(a)(iii) as containing the following defect(s) in the form or content thereof: the spiral platform with cylindrical chute as claimed in claim 27 is not shown in the drawing figures.

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of:

IV. 3. This Authority considers that the requirement of unity of invention is accordance with Rules 13.1, 13.2 and 13.3 is not complied with for the following reasons:

The International Search Authority has found 8 inventions claimed in the International Application covered by the claims indicated below:

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Group I, claim(s) 1-51 and 73-84, drawn to an apparatus and system for cooking, drying and peeling shellfish products.

Group II, claim(s) 52-66 and 91, drawn to a method for processing raw seafood product.

Group III, claim(s) 67, drawn to a broth processing system.

Group IV, claim(s) 68, drawn to a food flavoring byproduct system.

Group V, claim(s) 69-70, drawn to a peeling device in communication with a dryer.

Group VI, claim(s) 71, drawn to a spiral conveyor dryer in communication with a peeling device.

Group VII, claim(s) 72, drawn to a stacked conveyor dryer in communication with a peeling device.

Group VIII claim(s) 85-90, drawn to a method for producing shellfish flavored oil.

This International Searching Authority considers that the international application does not comply with the requirements of unity of invention (Rules 13.1, 13.2, 13.3) for the reasons indicated below:

The inventions listed as Groups I and II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the invention of Group I has a special technical feature of an automated means for dumping shellfish product which is different than the special technical feature of the invention of Group II which is delivering raw seafood product to a heated receptacle having a brine solution therein.

The inventions listed as Groups I and III do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the invention of Group I has a special technical feature of an automated means for dumping shellfish product which is different than the special technical feature of the

Supplemental Box

invention of Group III which is the brine solution from a seafood broiler is transported to holding tanks prior to packaging as a brine broth.

The inventions listed as Groups I and IV do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the invention of Group I has a special technical feature of an automated means for dumping shellfish product which is different than the special technical feature of the invention of Group IV which is the brine solution is extracted from the heated receptacle and injected into a heated furnace or hopper as a fine mist where it is immediately dehydrated.

The inventions listed as Groups I and V do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the invention of Group I has a special technical feature of an automated means for dumping shellfish product which is different than the special technical feature of the invention of Group V which is a screen sweeper/screened aperture providing access.

The inventions listed as Groups I and VI do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the invention of Group I has a special technical feature of an automated means for dumping shellfish product which is different than the special technical feature of the invention of Group VI which is the spiral dryer cycles the product from a low end to a high end as heated air is passed over the product before dropping the product to the low end.

The inventions listed as Groups I and VII do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the invention of Group I has a special technical feature of an automated means for dumping shellfish product which is different than the special technical feature of the invention of Group VII which is the stacked conveyor dryer moves the product from one level to another as heated air is passed over the product.

The inventions listed as Groups I and VIII do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the invention of Group I has a special technical feature of an automated means for dumping shellfish product which is different than the special technical feature of the invention of Group VIII which is extracting flavor from the pulverized byproduct into the neutral oil.

The inventions listed as Groups II and III do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the invention of Group II has a special technical feature of delivering raw seafood product to a heated receptacle having a brine solution therein which is different than the special technical feature of the invention of Group III which is the brine solution from a seafood broiler is transported to holding tanks prior to packaging as a brine broth.

The inventions listed as Groups II and IV do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the invention of Group II has a special technical feature of delivering raw seafood product to a heated receptacle having a brine solution therein which is different than the special technical feature of the invention of Group IV which is the brine solution is extracted from the heated receptacle and injected into a heated furnace or hopper as a fine mist where it is immediately dehydrated.

The inventions listed as Groups II and V do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the invention of Group II has a special technical feature of delivering raw seafood product to a heated receptacle having a brine solution therein which is different than the special technical feature of the invention of Group V which is a screen sweeper/screened aperture providing access.

The inventions listed as Groups II and VI do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the invention of Group II has a special technical feature of delivering raw seafood product to a heated receptacle having a brine solution therein which is different than the special technical feature of the invention of Group VI which is the spiral dryer cycles the product from a low end to a high end as heated air is passed over the product before dropping the product to the low end.

The inventions listed as Groups II and VII do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the invention of Group II has a special technical feature of delivering raw seafood product to a heated receptacle having a brine solution therein which is different than the special technical feature of the invention of Group VII which is the stacked conveyor dryer moves the product from one level to another as heated air is passed over the product.

The inventions listed as Groups II and VIII do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the invention of Group II has a

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special technical feature of delivering raw seafood product to a heated receptacle having a brine solution therein which is different than the special technical feature of the invention of Group VIII which is extracting flavor from the pulverized byproduct into the neutral oil.

The inventions listed as Groups III and IV do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the invention of Group III has a special technical feature of delivering raw seafood product to a heated receptacle having a brine solution therein which is different than the special technical feature of the invention of Group IV which is the brine solution is extracted from the heated receptacle and injected into a heated furnace or hopper as a fine mist where it is immediately dehydrated.

The inventions listed as Groups III and V do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the invention of Group III has a special technical feature of delivering raw seafood product to a heated receptacle having a brine solution therein which is different than the special technical feature of the invention of Group V which is a screen sweeper/screened aperture providing access.

The inventions listed as Groups III and VI do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the invention of Group III has a special technical feature of delivering raw seafood product to a heated receptacle having a brine solution therein which is different than the special technical feature of the invention of Group VI which is the spiral dryer cycles the product from a low end to a high end as heated air is passed over the product before dropping the product to the low end.

The inventions listed as Groups III and VII do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the invention of Group III has a special technical feature of delivering raw seafood product to a heated receptacle having a brine solution therein which is different than the special technical feature of the invention of Group VII which is the stacked conveyor dryer moves the product from one level to another as heated air is passed over the product.

The inventions listed as Groups III and VIII do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the invention of Group III has a special technical feature of delivering raw seafood product to a heated receptacle having a brine solution therein which is different than the special technical feature of the invention of Group VIII which is extracting flavor from the pulverized byproduct into the neutral oil.

The inventions listed as Groups IV and V do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the invention of Group IV has a special technical feature of the brine solution is extracted from the heated receptacle and injected into a heated furnace or hopper as a fine mist where it is immediately dehydrated which is different than the special technical feature of the invention of Group V which is a screen sweeper/screened aperture providing access.

The inventions listed as Groups IV and VI do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the invention of Group IV has a special technical feature of the brine solution is extracted from the heated receptacle and injected into a heated furnace or hopper as a fine mist where it is immediately dehydrated which is different than the special technical feature of the invention of Group VI which is the spiral dryer cycles the product from a low end to a high end as heated air is passed over the product before dropping the product to the low end.

The inventions listed as Groups IV and VII do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the invention of Group IV has a special technical feature of the brine solution is extracted from the heated receptacle and injected into a heated furnace or hopper as a fine mist where it is immediately dehydrated which is different than the special technical feature of the invention of Group VII which is the stacked conveyor dryer moves the product from one level to another as heated air is passed over the product.

The inventions listed as Groups IV and VIII do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the invention of Group IV has a special technical feature of the brine solution is extracted from the heated receptacle and injected into a heated furnace or hopper as a fine mist where it is immediately dehydrated which is different than the special technical feature of the invention of Group VIII which is extracting flavor from the pulverized byproduct into the neutral oil.

The inventions listed as Groups V and VI do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the invention of Group V has a special technical feature of a screen sweeper/screened aperture providing access which is different than the special technical feature of the invention of Group VI which is the spiral dryer cycles the product from a low end to a high end as heated air is passed over the product before dropping the product to the low end.

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The inventions listed as Groups V and VII do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the invention of Group V has a special technical feature of a screen sweeper/screened aperture providing access which is different than the special technical feature of the invention of Group VII which is the stacked conveyor dryer moves the product from one level to another as heated air is passed over the product.

The inventions listed as Groups V and VIII do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the invention of Group V has a special technical feature of a screen sweeper/screened aperture providing access which is different than the special technical feature of the invention of Group VIII which is extracting flavor from the pulverized byproduct into the neutral oil.

The inventions listed as Groups VI and VII do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the invention of Group VI has a special technical feature of the spiral dryer cycles the product from a low end to a high end as heated air is passed over the product before dropping the product to the low end which is different than the special technical feature of the invention of Group VII which is the stacked conveyor dryer moves the product from one level to another as heated air is passed over the product.

The inventions listed as Groups VI and VIII do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the invention of Group VI has a special technical feature of the spiral dryer cycles the product from a low end to a high end as heated air is passed over the product before dropping the product to the low end which is different than the special technical feature of the invention of Group VIII which is extracting flavor from the pulverized byproduct into the neutral oil.

The inventions listed as Groups VII and VIII do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the invention of Group VII has a special technical feature of the stacked conveyor dryer moves the product from one level to another as heated air is passed over the product which is different than the special technical feature of the invention of Group VIII which is extracting flavor from the pulverized byproduct into the neutral oil.

V. 2. Citations and Explanations:

Claims 48-51 lack novelty under PCT Article 33(2) as being anticipated by U.S. Patent No. 3,594,860 to Nelson et al.

Referring to claims 49-51, Nelson et al. discloses an apparatus processing shellfish comprising, a fluid filled conk tank - at 50, for separating shellfish product from packing ice, sea shells and other such large objects and an automated means - at 14-28, for transporting the crated product to the conk tank - see for example figure 1, dumping the shellfish product into the conk tank from the crate and removing the crate - at 24, therefrom - see for example figures 1-2.

Referring to claim 48, Nelson et al. discloses a dumping cage - at 28, for discharging crated seafood product into a conk tank - at 50, comprising means for receiving the crated seafood product - at 22, means for displacing the crate - at 14,18,20, whereby the crate is up-ended to discharge the contents - see figure 1, and means for receiving the crate from the receiving means - see for example 28, 20 - see figure 1.

Claims 1-47 and 73-77 meet the criteria set out in PCT Article 33(2)-(3), because the prior art does not teach or fairly suggest one or more auxiliary boilers in line with the conduit for heating the brine to be desired temperature and storing it therein, wherein the brine is able to replenish used brine that has been removed from the primary seafood boiler.

Claims 78-84 meet the criteria set out in PCT Article 33(2)-(3), because the prior art does not teach or fairly suggest means for using the shellfish byproduct to produce a shellfish flavored oil able to be consumed by human beings

Claims 1-51 and 73-84 meet the criteria set out in PCT Article 33(4), and thus have industrial applicability because the subject matter claimed can be made or used in industry.

----- NEW CITATIONS -----

CLAIMS

What is claimed is new and desired to be protected by letters patent is set forth in the appended claims:

1. Apparatus and system for cooking, drying and peeling shellfish product comprising:
 - a) a fluid filled conk tank for separating the shellfish product from packing ice, sea shells and other such large objects;
 - b) means for automatically transporting the product to said conk tank and dumping the shellfish product into said conk tank;
 - c) a boiler system for supplying heated brine and cooking the shellfish product therein, said boiler system comprising:
 - i) a brine mixing tank including means for introducing water therein and means for introducing salt therein to create a brine solution of a predetermined concentration in which the shellfish product is to be cooked;
 - ii) a primary seafood boiler for retaining brine obtained from said brine mixing tank and maintaining said brine at a constant, predetermined temperature; and
 - iii) a conduit extending between said brine mixing tank and said primary seafood boiler for selectively transporting of brine to primary mixing tank; and
 - iv) at least one auxiliary boilers in line with said conduit for heating said brine to the desired temperature and storing the brine therein until called for to replenish used brine that has been removed from said primary seafood boiler; and
 - d) means for automatically transferring the shellfish product from said conk tank to said boiler system.
2. Apparatus and system for cooking, drying and peeling shellfish product as recited in claim 1, further comprising means for retaining the shellfish product, wherein said means for retaining shellfish product includes at least one of a crate and a container, and

wherein said means for automatically transporting product removes said retaining means therefrom upon said product being dumped from said retaining means into said conk tank.

3. Apparatus and system for cooking, drying and peeling shellfish product as recited in claim 1, wherein said primary seafood boiler further includes means for agitating said brine and shellfish product contents therein.

4. Apparatus and system for cooking, drying and peeling shellfish product as recited in claim 3, wherein said agitation means includes at least one paddle wheel at a surface of said brine for moving the shellfish product evenly therethrough.

5. Apparatus and system for cooking, drying and peeling shellfish product as recited in claim 3, wherein said agitation means includes at least one jet nozzle for circulating the brine and shellfish product within the boiler.

6. Apparatus and system for cooking, drying and peeling shellfish product as recited in claim 1, wherein said primary seafood boiler further includes means for selectively maintaining and monitoring a specific temperature of said brine therein.

7. Apparatus and system for cooking, drying and peeling shellfish product as recited in claim 1, wherein said primary seafood boiler further includes salinity monitoring sensors for monitoring the salinity concentration of said brine thereby ensuring that the shellfish product is being cooked in desired brine mix.

8. Apparatus and system for cooking, drying and peeling shellfish product as recited in claim 1, further comprising a broth processing system wherein used brine is extracted from said primary seafood boiler and transported to said broth processing system for preparation into a seafood flavored broth.

9. Apparatus and system for cooking, drying and peeling shellfish product as recited in claim 8, further comprising broth storage tanks for the storage of said seafood flavored broth.

10. Apparatus and system for cooking, drying and peeling shellfish product as recited in claim 8, further comprising a broth packaging system for packaging said broth for at least one of sale and use in a commercial market.

11. Apparatus and system for cooking, drying and peeling shellfish product as recited in claim 1, further comprising a spray drying system wherein used brine is extracted from said primary seafood boiler and injected as a fine mist into a heated furnace where instantaneous crystallization occurs creating a solid product to be used as a shellfish product flavored salt.

12. Apparatus and system for cooking, drying and peeling shellfish product as recited in claim 1, further comprising:

- a) at least one dryer for dehydrating the shellfish product; and
- b) means for automatically transferring the shellfish product from said boiler system to said dryer.

13. Apparatus and system for cooking, drying and peeling shellfish product as recited in claim 12, wherein said means for automatically transporting said shellfish product from the said boiler system to said dryer is a seafood dryer conveyor having a first lower end disposed at a bottom portion of said primary seafood boiler and a second end extending over and beyond an opposing sidewall of said dryer wherein said dryer conveyor has a substantially horizontal orientation and terminates upon introduction to said dryer.

14. Apparatus and system for cooking, drying and peeling shellfish product as recited in claim 13, wherein said seafood dryer conveyor further includes a plurality of high speed fans positioned over a top side of said conveyor and along a length thereof, said plurality of high speed fans cool the shellfish product and stoping the cooking process.

PAT. 6,600,505, 04/03/01, 1:00:32 PM

15. Apparatus and system for cooking, drying and peeling shellfish product as recited in claim 13, wherein said seafood dryer conveyor further includes a plurality of spreader bars traversing the width of said seafood dryer conveyor and disposed at a predetermined distance thereabove at a height sufficient to permit individual pieces of shellfish product to pass thereunder and for preventing passage of stacked shellfish thereby causing all shellfish pieces to be positioned on said conveyor and assuring the shellfish product is evenly spread thereon for more efficient cooling.

16. Apparatus and system for cooking, drying and peeling shellfish product as recited in claim 13, wherein said seafood dryer conveyor further includes a plurality of rakes for turning said shellfish product to further ensure at least one of uniform drying and uniform cooling thereof.

17. Apparatus and system for cooking, drying and peeling shellfish product as recited in claim 13, wherein said seafood dryer conveyor is enclosed to prevent exposure to airborne contaminants.

18. Apparatus and system for cooking, drying and peeling shellfish product as recited in claim 13, further including a transport portion of said seafood dryer conveyor composed of a mesh-like belting to permit the passage of air therethrough.

19. Apparatus and system for cooking, drying and peeling shellfish product as recited in claim 13, further comprising means for supplying heat to the dryers by capturing heat generated by said boiling and broth systems and transferring the captured heat thereto.

20. Apparatus and system for cooking, drying and peeling shellfish product as recited in claim 19, wherein dryer heat supplying means includes a manifold integral with said boiler system and in communication with the dryers to scavenge the heat from the heat generating boilers and transfer said scavenged heat to said dryer.

21. Apparatus and system for cooking, drying and peeling shellfish product as recited in claim 19, wherein said dryer heat supplying means further includes an air return system for returning air to said boiler system from said dryers using fans or blowers to maintain constant air flow and recirculation.

22. Apparatus and system for cooking, drying and peeling shellfish product as recited in claim 12, wherein said dryers include means for moving and rotating said shellfish product within said dryers during the drying process.

23. Apparatus and system for cooking, drying and peeling shellfish product as recited in claim 22, wherein said product moving and rotating means is a vertically stacked conveyor system having a plurality of staggered, parallel conveyors spaced apart one above another and each moving in alternating directions, wherein the shellfish product is introduced into the dryer on a first top conveyor moving in a first direction and falls off upon reaching an end thereof and lands on a second subjacent conveyor moving in a direction opposite said first conveyor thereby effectively rotating said shellfish product and moving said shellfish product to an end thereof and providing said shellfish product to a further conveyor subjacent to said second conveyor until reaching a final bottom conveyor for transporting the shellfish product to a further dryer.

24. Apparatus and system for cooking, drying and peeling shellfish product as recited in claim 22, wherein said product moving and rotating means is a vertically stacked conveyor system having a plurality of staggered, parallel conveyors spaced apart one above another and each moving in alternating directions, wherein the shellfish product is introduced into the dryer on a first top conveyor moving in a first direction and falls off upon reaching an end thereof and lands on a second subjacent conveyor moving in a direction opposite said first conveyor thereby effectively rotating said shellfish product and moving said shellfish product to an end thereof and providing said shellfish product to a further conveyor subjacent to said second conveyor until reaching a final bottom conveyor for transporting the shellfish product to a peeling device.

25. Apparatus and system for cooking, drying and peeling shellfish product as recited in claim 22, wherein said product moving and rotating device comprises a spiral platform having a substantially cylindrical chute extending medially therethrough wherein of said spiral platform spirals the shellfish product upwards until reaching a top section where said shellfish product enters said chute and falls to a bottom section thereby rotating said product which is subsequently reloaded onto said spiral platform as the cycle repeats for a predetermined number of times.

26. Apparatus and system for cooking, drying and peeling shellfish product as recited in claim 13, wherein said dryers further include vacuum bars running along a bottom portion of said dryer for vacuuming accumulated shells and shellfish product that may have fallen off said dryer conveyor.

27. Apparatus and system for cooking, drying and peeling shellfish product as recited in claim 12, wherein said dryers further include sensors for detecting a moisture content within said shellfish product to ensure complete dehydration and to eliminate any pathogens therefrom.

28. Apparatus and system for cooking, drying and peeling shellfish product as recited in claim 12, further comprising a product transfer system which utilizes suction to vacuum said shellfish product from one device to another.

29. Apparatus and system for cooking, drying and peeling shellfish product as recited in claim 28, wherein said at least one dryer is a spiral dryer and further comprising a peeling device and product transfer system is utilized to move said shellfish product from said spiral dryer to a peeler.

30. Apparatus and system for cooking, drying and peeling shellfish product as recited in claim 12, wherein said dryer further comprises conveyor rakes to stir said shellfish product during drying.

31. Apparatus and system for cooking, drying and peeling shellfish product as recited in claim 30, further comprising moisture sensors for activating said

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conveyor rakes after sensing the shellfish product has an amount of moisture therein greater than a threshold moisture level.

32. Apparatus and system for cooking, drying and peeling shellfish product as recited in claim 12, wherein said dryer further include temperature control means.

33. Apparatus and system for cooking, drying and peeling shellfish product as recited in claim 32, wherein said temperature control means comprises:

- a) thermostats; and
- b) regulators.

34. Apparatus and system for cooking, drying and peeling shellfish product as recited in claim 12, wherein said dryers further include air contaminate sensors for detecting a presence of at least one of contaminants and toxins within said dryer.

35. Apparatus and system for cooking, drying and peeling shellfish product as recited in claim 34, further comprising an alarm and notification mechanism connected to said air contaminate sensors to notify an operator of said system to the existence of a potentially hazardous condition.

36. Apparatus and system for cooking, drying and peeling shellfish product as recited in claim 12, wherein said dryers include a video monitoring device to allow an operator to observe the operation within the dryers.

37. Apparatus and system for cooking, drying and peeling shellfish product as recited in claim 12, wherein said dryers further include rheostats.

38. Apparatus and system for cooking, drying and peeling shellfish product as recited in claim 12, further comprising:

- a) at least one peeling device for removing at least one of heads, shells and tails from the shellfish product; and

b) means for automatically transferring the dried shellfish product from said dryer into said peeling device and for removing the shellfish product therefrom.

39. Apparatus and system for cooking, drying and peeling shellfish product as recited in claim 38, wherein said peeling device comprises:

- a) an inner compartment having a screened bottom;
- b) an outer compartment;
- c) a blade member that spins within said inner compartment so that the cleaned shellfish product rides along the smooth walls of said inner compartment while the heavier uncleaned shellfish product falls onto said screened bottom to continue cleaning and de-shelling process.

40. Apparatus and system for cooking, drying and peeling shellfish product as recited in claim 39, wherein said peeling device further comprises at least one of:

- a) means for separation of debris and shells from finished product by vacuum extraction and loading by-product into at least one of packages, drums and storage bins;
- b) means connected serially between said dryer and said product transfer system for grading product by size;
- c) means for auto-unloading of finished product connected to said peeler;
- d) mobile tilting unit connected to said peeler for tilting said peeling device;
- e) a stationary stand connected for supporting said peeler;
- f) a screen sweeper positioned within said inner compartment and over said screened connected within said peeler for removing objects therefrom; and
- g) a plurality of air jets positioned within said inner compartment for circulating said shellfish product therein.

41. Apparatus and system for cooking, drying and peeling shellfish product as recited in claim 1, further comprising an automated means for separating shells and debris from a finished seafood product.

42. Apparatus and system for cooking, drying and peeling shellfish product as recited in claim 1, further comprising an automated means for grading said shellfish product by size.

43. Apparatus and system for cooking, drying and peeling shellfish product as recited in claim 1, further comprising an automated means for packaging shells and dust.

44. Apparatus and system for cooking, drying and peeling shellfish product as recited in claim 2, wherein said automated means for transporting the retained shellfish product to said conk tank comprises:

a) a conk tank conveyor system having a first loading end and a second dumping end, said dumping end extending above and beyond an edge of said conk tank;

b) a dumping cage disposed proximal to said dumping end of said conveyor system positioned in a manner conducive to catching said retaining means after falling off said dumping end so an open top portion of the retaining means is oriented towards said conk tank thereby emptying the contents of said retaining means therein, said dumping cage being substantially open so as not to restrict passage therethrough of said shellfish product; and

c) means for mechanically ejecting said retaining means from said dumping cage.

45. Apparatus and system for cooking, drying and peeling shellfish product as recited in claim 1, wherein said conk tank comprises:

a) a watertight housing having sidewalls and an open top;

b) a predetermined quantity of water retained within said housing; and

c) means for agitating said water and lighter objects within said conk tank.

46. Apparatus and system for cooking, drying and peeling shellfish product as recited in claim 2, wherein said means for transferring the shellfish product from said conk tank to said boiler system is a substantially inclined conk tank conveyor having a first lower end located at a bottom portion of said conk tank, and a

second, upper end extending above and beyond an opposing sidewall of said conk tank housing extending over said primary seafood boiler thereby permitting the shellfish product to fall therein upon reaching the end of said conk tank conveyor.

47. Apparatus and system for cooking, drying and peeling shellfish product as recited in claim 1, further comprising a computerized monitoring system and central data base to oversee operational phases of said system and apparatus, said computerized monitoring system and central database comprising at least one of:

- a) a video and audio monitoring device;
- b) a chemical detection sensor;
- c) a product tracking device;
- d) production schedule monitor;
- e) a scale for determining gross weights of product;
- f) product yield device;
- g) critical control point sensor;
- h) product water activity sensor;
- i) moisture content sensor;
- j) an air and water heat sensor;
- k) heat, water and air flow control system;
- l) a salinity monitor;
- m) a plurality of timers and controls for timing and controlling each of the cooking phase, drying phase and peeling phase;
- n) a Hazardous Analysis Critical Control Point (HACCP) guidelines and regulation system;
- o) a system for determining compliance with at least one of government agency inspection and production requirements;
- p) quality control monitoring system;
- q) troubleshooting system able to troubleshoot operational problems of said system and apparatus;
- r) means for providing good manufacturing process tips to an operator of said system and apparatus;
- s) raw product testing system;
- t) at least one alarm and notification system;
- u) means for grading product size;

- v) a thermostat;
- w) a regulator;
- x) LED control panel for controlling said system and apparatus; and
- y) rheostats.

48. A dumping cage for discharging crated seafood product into a conk tank comprising:

- a) means for receiving said crated seafood product;
- b) means for displacing the crate whereby the crate is up-ended to discharge the contents; and
- c) means for removing the crate from the receiving means.

49. A product delivery apparatus for conveying crated seafood product to a conk tank comprising:

- a) means for receiving said crated seafood product; and
- b) means for elevating said crated seafood product to the upper rim of a conk tank.

50. A system for delivering raw crated seafood product and discharging said product into a conk tank comprising:

- a) a product delivery apparatus; and
- b) a dumping cage for discharging said crated seafood into a conk tank.

51. A conk tank for retaining raw seafood product and water therein comprising at least two of:

- a) means for circulating water under pressure;
- b) means for testing raw seafood product;
- c) means for agitating water and raw seafood product in said tank;
- d) means for preventing passage of ice while transferring raw seafood product from said conk tank; and
- e) sensor means incorporated therein for detecting foreign substances and chemicals within said tank.

52. A method for processing raw seafood product comprising:
- a) delivering raw seafood product to a heated receptacle having a brine solution therein;
 - b) heating the receptacle; and
 - c) recovering heat used for heating the receptacle for later use thereof.
53. The method as recited in Claim 52 wherein said step of delivering further comprises taking raw seafood product from a lift basket and conveyor belt.
54. The method as recited in Claim 53 wherein said step of taking raw seafood product further comprises the steps of:
- a) supporting a crate having raw seafood product therein;
 - b) conveying the crate of product to an input aperture of a boiler; and
 - c) discharging the raw seafood product from the crate into the boiler.
55. The method as recited in Claim 53 wherein said step of taking raw seafood further comprises the step of extending a conveyor belt having two distal ends and a motorized means for rotating the belt, wherein a first distal end of the conveyor belt terminates at an input aperture for the boiler.
56. The method as recited in Claim 52 further comprising the step of mixing the raw seafood product, in a brine mixing tank in communication with the heated receptacle.
57. The method as recited in Claim 52 further comprising the step of holding in auxiliary tanks a brine solution, wherein the auxiliary tanks are in communication with the heated receptacle.
58. The method as recited in Claim 52, further comprising the step of drying the processed seafood from the heated receptacle.
59. The method as recited in Claim 58, further comprising the step of incorporating the re-circulated heat from said step of heating for use in said step of drying.

60. The method as recited in claim 58, further comprising the step of peeling the dried shellfish product using a peeling device.

61. The method as recited in claim 60, wherein the shellfish is a hard-shelled shellfish and said step of peeling further comprises the steps of:

- a) transferring partially peeled hard-shell shellfish from the peeling device to a freezer device;
- b) freezing the partially peeled hard-shell shellfish in the freezer device causing any shell still attached thereto to become brittle;
- c) further transferring the frozen partially peeled hard-shell shellfish to at least one of the peeling device and a second peeling device;
- d) further peeling of the hard-shell shellfish to remove any remaining shell therefrom.

62. The method as recited in claim 61, wherein said step of freezing results in hard-shell shellfish meat that has a greater durability and allows for a greater yield in final product.

63. The method as recited in Claim 52, further comprising the step of transferring the brine solution under predetermined conditions to a broth processing system.

64. The method as recited in Claim 63, wherein said step of transferring to the broth processing system further comprises the steps of:

- a) storing the broth in a plurality of tanks; and
- b) packaging the broth.

65. The method as recited in Claim 52, further comprising the step of passing air through a sealed conduit that connects a delivery mechanism with the receptacle and causing the air to be heated.

66. The method as recited in Claim 52 further comprising the step of drying the processed seafood using a spray drying system, said step of drying further comprises the steps of:

- a) extracting brine from the heated receptacle;
- b) injecting the extracted brine into at least one of a heated furnace and hopper as a fine mist;
- c) dehydrating the injected mist;
- d) creating a solid product to be used as a seafood flavored salt or additive.

67. A broth processing system wherein the brine solution from a seafood boiler is transported to holding tanks prior to packaging as a brine broth.

68. A food flavoring byproduct system wherein the brine solution from a seafood boiler is extracted from the heated receptacle and injected into a heated furnace or hopper as a fine mist where it is almost immediately dehydrated thereby creating a solid product to be used as a seafood flavored salt or additive.

69. A peeling device in communication with a dryer, wherein said peeling device is comprised of:

- a) a loading device
- b) a screen sweeper
- c) a blade; and
- d) a tilting unit.

70. A peeling device in communication with a dryer, wherein said peeling device is comprised of:

- a) a stationary stand;
- b) an unloading device;
- c) a blade; and
- d) a screened aperture providing access.

71. A spiral conveyor dryer in communication with a peeling device, wherein said spiral dryer cycles the product from a low end to a high end as heated air is passed over said product before dropping said product to the low end.

72. A stacked conveyor dryer in communication with a peeling device, wherein said stacked conveyor drier moves the product from one level to another as heated air is passed over said product.

73. Apparatus and system for cooking, drying and peeling shellfish product as recited in claim 13, further comprising at least one pair of rollers positioned vertically on top of one another and having a predetermined gap therebetween, wherein said at least one pair of rollers is positioned at a distal end of said seafood dryer conveyor and prior to said at least one dryer.

74. Apparatus and system for cooking, drying and peeling shellfish product as recited in claim 73, wherein said pair of rollers is able to at least one of crush and crack shells of the shellfish product passing therethrough to allow for a more efficient dehydration thereof

75. Apparatus and system for cooking, drying and peeling shellfish product as recited in claim 74, wherein said at least one pair of rollers are adjustable thereby producing different sized gaps in order to accommodate a plurality of different types of shellfish therethrough.

76. Apparatus and system for cooking, drying and peeling shellfish product as recited in claim 38, wherein said peeler partially shells the shellfish product and further comprises:

- a) a freezer device for freezing said partially shelled shellfish product and causing any remaining shells to become brittle;
- b) a first means for transferring said partially shelled shellfish product to said freezer device;
- c) a second means for transferring frozen partially shelled shellfish product to a further peeling device for complete removal of said remaining shells.

77. Apparatus and system for cooking, drying and peeling shellfish product as recited in claim 76, wherein said further peeling device is at least one of said peeler and a second peeler device.

78. Apparatus and system for cooking, drying and peeling shellfish product to produce a shellfish flavored oil comprising:

- a) means for transporting raw shellfish product for processing thereof;
- b) means connected to said transporting means for cooking and dehydrating said raw shellfish product;
- c) means for peeling said cooked and dehydrated shellfish product to produce shellfish byproduct;
- d) means for using said shellfish byproduct to produce a shellfish flavored oil able to be consumed by human beings.

79. Apparatus and system for cooking, drying and peeling shellfish product to produce a shellfish flavored oil as recited in claim 78, further comprising means for adding a further flavor element to said shellfish flavored oil.

80. Apparatus and system for cooking, drying and peeling shellfish product to produce a shellfish flavored as recited in claim 79, wherein said further flavor element is at least one of a lemon flavor, garlic flavor, spice flavor, butter flavor and any other flavor element for human consumption.

81. Apparatus and system for cooking, drying and peeling shellfish product to produce a shellfish flavored oil as recited in claim 78, wherein said using means comprises:

- a) a container for retaining a neutral oil therein;
- b) means for pulverizing said byproducts and for transferring said pulverized byproduct to said container thereby forming a mixture of pulverized byproduct and neutral oil;
- c) means disposed beneath said container for heating said mixture at a low heat;

- d) a filtering device for filtering said heated mixture in order to produce said shellfish flavored oil.

82. Apparatus and system for cooking, drying and peeling shellfish product to produce a shellfish flavored oil as recited in claim 81, wherein said neutral oil includes at least one of Soy, Canola, Vegetable, Olive and Medium Chain Triglycerides (MCT) oil.

83. Apparatus and system for cooking, drying and peeling shellfish product to produce a shellfish flavored oil as recited in claim 78, wherein said byproduct includes heads, tails, legs and shells of said shellfish that were removed by a peeling device and wherein said shellfish flavor originates from shellfish meat in cavities in each piece of byproduct.

84. Apparatus and system for cooking, drying and peeling shellfish product to produce a shellfish flavored oil as recited in claim 78, wherein said filtering device is at least one of a cheesecloth and a screen formed from a fine mesh.

85. A method for producing a shellfish flavored oil comprising the steps of:
- a) transporting raw shellfish product for processing thereof;
 - b) cooking and dehydrating the raw shellfish product;
 - c) peeling the cooked and dehydrated shellfish product to produce shellfish byproduct;
 - d) pulverizing the shellfish byproduct into a powder form;
 - e) transferring the pulverized byproduct to a container having a neutral oil contained therein to form a mixture of pulverized byproduct and neutral oil;
 - f) heating the mixture in the container on a low heat for a predetermined amount of time;
 - g) extracting flavor from the pulverized byproduct into the neutral oil; and
 - h) filtering the mixture thereby producing a shellfish flavored oil.

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86. The method for producing a shellfish flavored oil as recited in claim 85, further comprising the step of adding a further flavor element to the shellfish flavored oil.

87. The method for producing a shellfish flavored oil as recited in claim 85, wherein said step of peeling further includes the step of removed at least one of a head of the shellfish, a tail of the shellfish, at least one leg of the shellfish and deshelling the shellfish.

88. The method for producing a shellfish flavored oil as recited in claim 85, wherein said neutral oil includes at least one of Soy, Canola, Vegetable, Olive and Medium Chain Triglycerides (MCT) oil.

89. The method for producing a shellfish flavored oil as recited in claim 85, wherein said step of filter further comprises passing the mixture through at least one of a cheesecloth and a fine mesh screen.

90. The method for producing a shellfish flavored oil as recited in claim 85, wherein said step of pulverizing is performed in at least one of a mill and a grinder.

91. The method as recited in claim 61, wherein the hard-shell shellfish is at least one of crawfish and rock shrimp.